

287411

Duke, Daphne

From: Natanel Lev <nlev@poweradvisoryllc.com>

Sent: Thursday, September 12, 2019 6:03 PM

To: Knowles, Alex <aknowles@ors.sc.gov>; Bateman, Andrew <abateman@ors.sc.gov>;
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Cc: Stark, David <david.stark@psc.sc.gov>; John Dalton <jdalton@poweradvisoryllc.com>; Carson Robers
<crobers@poweradvisoryllc.com>

Subject: [External] PSC Docket No. 2019-185-E Notice of Service

To all parties registered under PSC Proceeding 2019-185-E:

This email is meant to serve as a notice of service that Power Advisory LLC (independent expert consultant engaged by the PSC) is hereby serving upon Duke Energy Carolinas, LLC with one First Request for Production and one First Request for Interrogatories. Attached to this email you will find:

1. First Request for Production
2. First Request for Interrogatories
3. Certificate of Service
4. Docket Cover Sheet
5. Filing Letter

Thank you,

Nathan Lev, JD, MES.



Consultant

55 University Ave, Suite 605 – PO BOX 32

Toronto, ON, Canada M5J 2H7

Email: nlev@poweradvisoryllc.com

Mobile: 416-887-3199

Web: www.poweradvisoryllc.com

STATE OF SOUTH CAROLINA

(Caption of Case)

South Carolina Energy Freedom Act (H.3659)
 Proceeding to Establish Duke Energy Carolinas,
 LLC's Standard Offer, Avoided Cost Methodologies,
 Form Contract Power Purchase Agreements,
 Commitment to Sell Forms, and Any Other Terms or
 Conditions Necessary (Includes Small Power
 Producers as Defined in 16 United States Code 796, as
 Amended) - S.C. Code Ann. Section 58-41-20(A)

BEFORE THE
 PUBLIC SERVICE COMMISSION
 OF SOUTH CAROLINA

COVER SHEET

DOCKET
 NUMBER: 2019 - 185 - E

(Please type or print)

Submitted by: John Dalton

SC Bar Number: _____

Address: 212 Thoreau StreetTelephone: 978 369 2465Concord, MA

Fax: _____

01742

Other: _____

Email: jdalton@poweradvisoryllc.com

NOTE: The cover sheet and information contained herein neither replaces nor supplements the filing and service of pleadings or other papers as required by law. This form is required for use by the Public Service Commission of South Carolina for the purpose of docketing and must be filled out completely.

DOCKETING INFORMATION (Check all that apply)

☐ Emergency Relief demanded in petition☐ Request for item to be placed on Commission's Agenda expeditiously☐ Other: _____

INDUSTRY (Check one)	NATURE OF ACTION (Check all that apply)			
<input checked="" type="checkbox"/> Electric	<input type="checkbox"/> Affidavit	<input type="checkbox"/> Letter	<input type="checkbox"/> Request	
<input type="checkbox"/> Electric/Gas	<input type="checkbox"/> Agreement	<input type="checkbox"/> Memorandum	<input type="checkbox"/> Request for Certification	
<input type="checkbox"/> Electric/Telecommunications	<input type="checkbox"/> Answer	<input type="checkbox"/> Motion	<input type="checkbox"/> Request for Investigation	
<input type="checkbox"/> Electric/Water	<input type="checkbox"/> Appellate Review	<input type="checkbox"/> Objection	<input type="checkbox"/> Resale Agreement	
<input type="checkbox"/> Electric/Water/Telecom.	<input type="checkbox"/> Application	<input type="checkbox"/> Petition	<input type="checkbox"/> Resale Amendment	
<input type="checkbox"/> Electric/Water/Sewer	<input type="checkbox"/> Brief	<input type="checkbox"/> Petition for Reconsideration	<input type="checkbox"/> Reservation Letter	
<input type="checkbox"/> Gas	<input type="checkbox"/> Certificate	<input type="checkbox"/> Petition for Rulemaking	<input type="checkbox"/> Response	
<input type="checkbox"/> Railroad	<input type="checkbox"/> Comments	<input type="checkbox"/> Petition for Rule to Show Cause	<input type="checkbox"/> Response to Discovery	
<input type="checkbox"/> Sewer	<input type="checkbox"/> Complaint	<input type="checkbox"/> Petition to Intervene	<input type="checkbox"/> Return to Petition	
<input type="checkbox"/> Telecommunications	<input type="checkbox"/> Consent Order	<input type="checkbox"/> Petition to Intervene Out of Time	<input type="checkbox"/> Stipulation	
<input type="checkbox"/> Transportation	<input checked="" type="checkbox"/> Discovery	<input type="checkbox"/> Prefiled Testimony	<input type="checkbox"/> Subpoena	
<input type="checkbox"/> Water	<input type="checkbox"/> Exhibit	<input type="checkbox"/> Promotion	<input type="checkbox"/> Tariff	
<input type="checkbox"/> Water/Sewer	<input type="checkbox"/> Expedited Consideration	<input type="checkbox"/> Proposed Order	<input type="checkbox"/> Other: _____	
<input type="checkbox"/> Administrative Matter	<input type="checkbox"/> Interconnection Agreement	<input type="checkbox"/> Protest		
<input type="checkbox"/> Other: _____	<input type="checkbox"/> Interconnection Amendment	<input type="checkbox"/> Publisher's Affidavit		
	<input type="checkbox"/> Late-Filed Exhibit	<input type="checkbox"/> Report		

Print Form

Reset Form

September 12, 2019

VIA ELECTRONIC FILING

The Honorable Jocelyn D. Boyd
Chief Clerk/Administrator
Public Service Commission of South Carolina
101 Executive Center Drive
Columbia, South Carolina 29211

Re: South Carolina Energy Freedom Act (H.3659) Proceeding to Establish Duke Energy Carolinas, LLC's Standard Offer, Avoided Cost Methodologies, Form Contract Power Purchase Agreements, Commitment to Sell Forms, and Any Other Terms or Conditions Necessary (Includes Small Power Producers as Defined in 16 United States Code 796, as Amended) - S.C. Code Ann. Section 58-41-20(A)

Dear Ms. Boyd,

Attached for filing on behalf of Power Advisory LLC, independent third-party consultant for the PSC, are Power Advisory's First Set of Interrogatories and First Request for Production to Duke Energy Carolinas, LLC. By copy of this letter, we are serving all parties of record and those entities that have petitioned to intervene in this matter with a copy of this notice and attach a certificate of service to that effect.

If you have any questions regarding this matter, please advise.

Kind Regards,

Power Advisory LLC

s/John Dalton

Carson Robers

Encl.

cc: Alexander W. Knowles
Andrew M. Bateman
Carrie Harris Grundmann

Derrick Price Williamson
J. Blanding Holman, IV
James Goldin
Benjamin L. Snowden
E. Brett Breitschwerdt
Jeremy C. Hodges
Frank R. Ellerbe III
Heather Shirley Smith
Rebecca J. Dulin
Nanette S. Edwards
Richard L. Whitt
Scott Elliott
Stephanie U. (Roberts) Eaton
Stinson Woodward Ferguson
Weston Adams III
Samuel J. Wellborn

BEFORE

THE PUBLIC SERVICE COMMISSION OF

SOUTH CAROLINA

DOCKET NO. 2019-185-E

IN RE:)	
South Carolina Energy Freedom Act (H.3659))	
Proceeding to Establish Duke Energy Carolinas,)	
LLC's Standard Offer, Avoided Cost)	POWER ADVISORY LLC'S (SERVING AS
Methodologies, Form Contract Power Purchase)	INDEPENDENT THIRD PARTY
Agreements, Commitment to Sell Forms, and)	CONSULTANT ENGAGED BY THE
Any Other Terms or Conditions Necessary)	COMMISSION) FIRST REQUESTS FOR
(Includes Small Power Producers as Defined in)	PRODUCTION OF DOCUMENTS TO
16 United States Code 796, as Amended) - S.C.)	DUKE ENERGY CAROLINAS, LLC
Code Ann. Section 58-41-20(A))	

Pursuant to S.C. Code Ann. Regs. 103-833 and the South Carolina Rules of Civil Procedure, Power Advisory LLC (“Power Advisory”), serving as the independent third-party consultant to the Public Service Commission of South Carolina (“PSCSC”) in this proceeding, hereby serves upon Duke Energy Carolinas, LLC. (“DEC”) these First Requests for Production of Documents (“Requests”) to be answered in writing within seven (7) days of the date of service hereof and that the documents identified in such written responses be produced for inspection and copying to the undersigned at the offices of John Dalton and Carson Robers, Power Advisory LLC, 212 Thoreau Street, Concord, Massachusetts 01742.

INSTRUCTIONS

IT IS HEREIN REQUESTED:

1. That all information shall be provided to the undersigned in the format as requested.

2. That all responses to the below Requests shall be labeled using the same numbers as used herein.
3. That if the requested information is found in other places or in other exhibits, reference not be made to those, but, instead, that the information be reproduced and placed in the responses to the Interrogatories in the appropriate sequence.
4. That any inquiries or communication relating to questions concerning clarifications of the information requested below be directed to the undersigned.
5. That all exhibits be reduced to an 8.5" x 11" format.
6. That all documents be provided in their native format, e.g., in Word, Excel, or PowerPoint format with all functions and formulas intact.
7. That, in addition to the signature and verification at the close of DEC's responses, DEC's witness(es) responsible for the information contained in each response be also indicated.
8. That each request be reproduced at the beginning of the response thereto.
9. That DEC provide the undersigned with responses to these Requests as soon as possible but not later than seven (7) days from the date of service hereof.
10. If the response to any request is that the information requested is not currently available, state when the information requested will become available.
11. These Requests shall be deemed continuing so as to require DEC to supplement or amend its responses as any additional information becomes available up to and through the date of hearing.
12. If a privilege not to answer an interrogatory is claimed, identify each matter as to which the privilege is claimed, the nature of the privilege, and the legal and factual basis for each such claim.

13. If a refusal to answer a request is based on the grounds that same would be unduly burdensome, identify the number and nature of documents needed to be searched, the location of the documents, and the number of man hours and the costs required to conduct the search.

14. Answer each request on the basis of the entire knowledge of DEC, including information in the possession of DEC, their officers, directors, consultants, representatives, agents, experts, and attorneys, if any.

15. If any request cannot be answered in full, answer to the extent possible and specify the reasons for DEC's inability to answer.

DEFINITIONS

1. The terms "DEC," "You," and "Your" where used in these Interrogatories refers to Duke Energy Carolinas, LLC, together with their employees, agents, consultants, experts, subsidiaries, affiliates, and other operational or functional units and all officers, directors, owners, members, employees, agents and representatives of these entities. It also includes all other persons acting on behalf of Duke Energy Carolinas, LLC.

2. The term "PSCSC" where used in these Requests refers to the Public Service Commission of South Carolina.

3. "Document" and "documents" shall mean all written, recorded or graphic matters whatsoever and all non-identical copies thereof, including but not limited to papers, work papers, books, records, letters, photographs, correspondence, communications, electronic mail, facsimile, telegrams, cables, telex messages, text messages, evidences of payment, checks, memoranda, notes, notations, transcripts, minutes, reports, recordings of telephone or other conversations, statements, summaries, opinions, studies, analyses, evaluations, contracts, agreements, jotting, agendas, bulletins, notices, announcements, advertisements, guidelines, charts, manuals,

brochures, publications, schedules, price lists, subscription lists, customer lists, journals, statistical reports, desk calendars, appointment books, diaries, lists, tabulations, newsletters, drafts, proofs, galleys, or other prepublication forms of materials, telephone lists or indexes, rolodexes, computer printouts, data processing program libraries, data processing input and outputs, microfilm, microfiches, cd roms, books of account, records or invoices reflecting business operations, all records kept by electronic, photographic or mechanical means, any notes or drafts relating to any of the foregoing, and any other documents as defined in Rule 34 of the South Carolina Rules of Procedure of any kind in your possession, custody or control or to which you have access or know to exist.

4. “Communication(s)” when used in these Requests shall include the transmittal of information by any means, written, oral, electronic or otherwise.

5. “Relate,” “relating,” “relating to,” and “related to” when used in these Interrogatories shall mean recording, summarizing, embodying, constituting, reflecting, digesting, referring to, commenting upon, describing, reporting, listing, analyzing, studying, or otherwise discussing in any way a subject matter identified in the interrogatory, and is defined so as to reach all matters within the scope of discovery pursuant to the Commission’s Regulations and the South Carolina Rules of Civil Procedure, including all information which, though inadmissible at trial, is reasonably calculated to lead to the discovery of admissible evidence.

6. Please construe “and” as well as “or” either disjunctively or conjunctively as necessary to bring within the scope of these Interrogatories any information which might otherwise be construed outside their scope.

REQUESTS FOR PRODUCTION

1. Produce all documents referred to by DEC or their attorneys in preparing the Answers to DEC's First Set of Interrogatories served contemporaneously herewith.
2. Produce any and all statements, written, oral, or transcribed, of any individual that relate in any manner to the claims of DEC in this matter or that relate in any manner to the matters at issue in this matter, whether said statements have been taken by DEC, or any individuals acting on behalf of DEC.
3. Produce any and all diagrams, sketches, drawings, maps, prints, negatives, photographs, videos, layouts, and other documents that relate in any manner to the claims of DEC in this matter or that relate in any manner to the matters at issue in this proceeding.
4. Produce all reports or other documents, including work papers, prepared by any expert witness retained by or on behalf of DEC in this case, including a current curriculum vitae.
5. Produce all documents in the custody or control of DEC or their attorneys that relate in any manner to the claims of DEC in this matter or that relate in any manner to the matters at issue in this proceeding, including without limitation, all exhibits DEC intend to use at trial.
6. Produce copies of all documents and calculations in Word and Excel format with all functions and formulas intact that support or form the basis for the testimony that you intend to present of any person identified in response to Interrogatory Nos. 1, 3, 4, or 5 as set forth in the First Set of Interrogatories served contemporaneously herewith.
7. Please provide copies of your responses to any interrogatories, requests to produce, or other forms of information or data requests simultaneously with your provision of said responses to the requesting party. If you have already provided responses to any information or data requests prior to the receipt of these Requests, then please provide any such responses within five (5) days of the receipt of these Requests.

John Dalton

John Dalton
Carson Robers
Power Advisory LLC
*Independent Third-party Consultant to the Public Service
Commission of South Carolina*
212 Thoreau Street
Concord, MA 01742
Telephone: (978) 369-2465
jdalton@poweradvisoryllc.com
crobers@poweradviosryllc.com

Concord, Massachusetts
September 12, 2019

BEFORE

THE PUBLIC SERVICE COMMISSION OF

SOUTH CAROLINA

DOCKET NO. 2019-185-E

IN RE:)	
South Carolina Energy Freedom Act (H.3659))	
Proceeding to Establish Duke Energy Carolinas,)	
LLC's Standard Offer, Avoided Cost)	
Methodologies, Form Contract Power Purchase)	
Agreements, Commitment to Sell Forms, and)	
Any Other Terms or Conditions Necessary)	
(Includes Small Power Producers as Defined in)	
16 United States Code 796, as Amended) - S.C.)	
Code Ann. Section 58-41-20(A))	
)	

	POWER ADVISORY LLC (SERVING AS
	INDEPENDENT THIRD PARTY
	CONSULTANT ENGAGED BY THE
	COMMISSION) FIRST SET OF
	INTERROGATORIES TO DUKE ENERGY
	CAROLINAS, LLC.

Pursuant to S.C. Code Ann. Regs. 103-833 and the South Carolina Rules of Civil Procedure, Power Advisory LLC (“Power Advisory”), serving as the independent third-party consultant to the Public Service Commission of South Carolina (“PSCSC”) in this proceeding, hereby requests that Duke Energy Carolinas, LLC. (“DEC”) respond to this First Set of Interrogatories (“Interrogatories”) fully, under oath, and in writing within seven (7) days of the date of service hereof to the offices of John Dalton and Caron Robers, Power Advisory LLC, 212 Thoreau Street, Concord, Massachusetts 01742.

INSTRUCTIONS

IT IS HEREIN REQUESTED:

1. That all information shall be provided to the undersigned in the format as requested.
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4. That any inquiries or communication relating to questions concerning clarifications of the information requested below be directed to the undersigned.

5. That all exhibits be reduced to an 8.5" x 11" format.

6. That each interrogatory be reproduced at the beginning of the response thereto.

7. That, in addition to the signature and verification at the close of DEC's responses, DEC's witness(es) responsible for the information contained in each response be also indicated.

8. That DEC provide the undersigned with responses to the Interrogatories as soon as possible but not later than seven (7) days from the date of service hereof.

10. If the response to any interrogatory is that the information requested is not currently available, state when the information requested will become available.

11. These Interrogatories shall be deemed continuing so as to require DEC to supplement or amend its responses as any additional information becomes available up to and through the date of hearing.

12. If a privilege not to answer an interrogatory is claimed, identify each matter as to which the privilege is claimed, the nature of the privilege, and the legal and factual basis for each such claim.

13. If a refusal to answer an interrogatory is based on the grounds that same would be unduly burdensome, identify the number and nature of documents needed to be searched, the location of the documents, and the number of man hours and the costs required to conduct the search.

14. Answer each interrogatory on the basis of the entire knowledge of DEC, including information in the possession of DEC, their officers, directors, consultants, representatives, agents, experts, and attorneys, if any.

15. If any interrogatory cannot be answered in full, answer to the extent possible and specify the reasons for DEC's inability to answer.

DEFINITIONS

1. The terms "DEC," "You," and "Your" where used in these Interrogatories refers to Duke Energy Carolinas, LLC, together with their employees, agents, consultants, experts, subsidiaries, affiliates, and other operational or functional units and all officers, directors, owners, members, employees, agents and representatives of these entities. It also includes all other persons acting on behalf of Duke Energy Carolinas, LLC.

2. The term "PSCSC" where used in these Interrogatories refers to the Public Service Commission of South Carolina.

3. "Document" and "documents" shall mean all written, recorded or graphic matters whatsoever and all non-identical copies thereof, including but not limited to papers, work papers, books, records, letters, photographs, correspondence, communications, electronic mail, facsimile, telegrams, cables, telex messages, text messages, evidences of payment, checks, memoranda, notes, notations, transcripts, minutes, reports, recordings of telephone or other conversations, statements, summaries, opinions, studies, analyses, evaluations, contracts, agreements, jotting, agendas, bulletins, notices, announcements, advertisements, guidelines, charts, manuals, brochures, publications, schedules, price lists, subscription lists, customer lists, journals, statistical reports, desk calendars, appointment books, diaries, lists, tabulations, newsletters, drafts, proofs, galleys, or other prepublication forms of materials, telephone lists or indexes, rolodexes, computer

printouts, data processing program libraries, data processing input and outputs, microfilm, microfiches, cd roms, books of account, records or invoices reflecting business operations, all records kept by electronic, photographic or mechanical means, any notes or drafts relating to any of the foregoing, and any other documents as defined in Rule 34 of the South Carolina Rules of Procedure of any kind in your possession, custody or control or to which you have access or know to exist.

4. “Relate,” “relating,” “relating to,” and “related to” when used in these Interrogatories shall mean recording, summarizing, embodying, constituting, reflecting, digesting, referring to, commenting upon, describing, reporting, listing, analyzing, studying, or otherwise discussing in any way a subject matter identified in the interrogatory, and is defined so as to reach all matters within the scope of discovery pursuant to the Commission’s Regulations and the South Carolina Rules of Civil Procedure, including all information which, though inadmissible at trial, is reasonably calculated to lead to the discovery of admissible evidence.

5. “Identify” or “identity” used with reference to an individual means to state his or her full name, present or last known address, present or last known position and business affiliation, and employer, title, and position at the time in question. If the person was an officer, director, trustee, commissioner, or employee of DEC, also state the job title and areas of responsibility.

6. “Identify” or “identity” used with reference to a writing means to state the date, author, type of document (e.g., letter, memorandum, e-mail, chart, note, application, etc.) or other means of identification, and its present location or custodian. If any such document is no longer in DEC’s possession or subject to its control, state what disposition was made of it.

7. “Address” means home address, mailing address, school address, and business

address.

8. Please construe “and” as well as “or” either disjunctively or conjunctively as necessary to bring within the scope of these Interrogatories any information which might otherwise be construed outside their scope.

INTERROGATORIES

1. In the Direct Testimony of George V. Brown, p. 10 of 18, Figure 1 shows DEC and DEP QF Capacity Under Contract for both North Carolina and South Carolina.

- (a) Please present in a table for each year shown in Table 1 for DEC and DEP separately, the MW of QF capacity under contract for QFs in North Carolina and South Carolina, respectively.
- (b) Please indicate in this table the amount of this capacity that is in commercial operation in each year for each state.

2. The Direct Testimony of George V. Brown, p. 14-15 of 18 states “North Carolina changed its PURPA implementation framework through legislation enacted in 2017, to eliminate the overly-generous, above market avoided cost rates and to promote more controlled and cost-effective development of new solar resources through a competitive procurement framework.”

- (a) Please indicate what these avoided cost rates were by year in \$/MWh by relevant time period.
- (b) How have the prices paid under this competitive procurement framework compared to the avoided costs that DEC and DEP have estimated? Please discuss and provide a direct comparison.
- (c) What was the time period over which these avoided cost rates were estimated (e.g., 10-years, 20-years)? Please discuss.

3. The Direct Testimony of George V. Brown, p. 16 of 18 states “This results in a currently forecasted over-payment of approximately \$2.26 billion, as compared to the Companies’ current avoided cost rates.”

- (a) Please provide the workpapers that derive this estimate of the over-payment.
- (b) What was the contract term offered these QFs?
- (c) If it is greater than 10 years, please estimate what the over-payment would have been if a ten-year term were offered.

4. The Direct Testimony of Glen A. Snider states “The peaker methodology is designed to determine a utility’s marginal capacity and marginal energy cost, and therefore, can be applied to quantify a utility’s avoided costs for purposes of pricing power purchases from QFs. This approach assumes that when a utility’s generating system is operating at equilibrium, the installed fixed capacity cost of a simple-cycle combustion turbine (“CT”) generating unit (a “peaker”) plus the variable marginal energy cost of running the system will produce a reasonable proxy for the marginal capacity and energy costs that a utility avoids by purchasing power from a QF.” (p. 10)

- (a) In Mr. Snider’s opinion how should whether a utility is operating at equilibrium be assessed?
- (b) What indications are there that DEC and DEP are operating at equilibrium?
- (c) Please identify anticipated utility retirements and capacity additions over the ten years for which avoided costs are estimated.
- (d) Please provide a copy of the most recent Integrated Resource Plans for DEC and DEP that most closely conform with these avoided cost estimates.
- (e) In the Companies’ opinion if they are relying on new resources for capacity additions with capacity costs that are higher than those of a “peaker” (e.g., a combined cycle gas

turbine) will the use of the peaker methodology understate the actual avoided capacity costs? Please explain your response.

5. The Direct Testimony of Glen A. Snider states “DEC’s projection of its first avoidable capacity need arises in 2026, while DEP’s first avoidable capacity need is 2020. The Companies’ projection of their respective first years of avoidable capacity need are consistent with the Companies’ upcoming 2019 IRP Update filings.” (p. 16)

- (a) Please provide the workpapers and analyses that support these projections of first avoidable capacity need consistent with the Companies’ upcoming 2019 IRP Update filings.
- (b) What have the Companies assumed with respect to attrition rates for new projects (e.g., solar QFs) when determining the avoidable capacity need.
- (c) How do these assumed attrition rates compare to the actual attrition rates for these solar QF projects. Please discuss.

6. The Direct Testimony of Glen A. Snider states “This is because natural gas commodity prices represent the primary driver of the avoidable energy cost since a natural gas-fueled combined-cycle unit or combustion turbine unit is often the marginal resource.” (p. 17)

(a) With respect to the avoided energy cost analysis for each year of the 10-year analysis period used to estimate avoided costs, indicate the proportion of time that a natural gas-fueled combined-cycle unit or combustion turbine unit are the marginal resource.

(b) With respect to the avoided energy cost analysis for each year of the 10-year analysis period used to estimate avoided costs, indicate the proportion of time that each fuel type relied upon by DEC and DEP represents the marginal resource.

7. The Direct Testimony of Glen A. Snider states “As shown in the illustrative example presented in Figure 4 below, the energy output from solar resources is variable; it can

unexpectedly and rapidly drop-off or ramp-up in real-time, thereby increasing uncertainty in day-ahead, hourly, and sub-hourly projections for fleet operations.”

(a) Have the Companies estimated the cumulative underlying variability of solar resources overall to assess the degree to which the geographic diversity of these resources reduced the underlying variability in aggregate? Please discuss.

(b) Please provide copies of any analyses performed by the companies evaluating this aggregate variability.

8. The Direct Testimony of Glen A. Snider states “The Companies are not proposing to apply this charge retrospectively to existing solar resources or to those solar resources that have established contracts under previously-authorized long-term fixed rates.” (p. 37). Please discuss the rationale for not applying this charge retrospectively to existing solar resources or those solar resources that have established contracts under previously-authorized long-term fixed rates.

9. The Direct Testimony of Glen A. Snider states “The Companies will not impose the Integration Services Charge on a solar QF that designs its facility—including through integration of energy storage equipment— and contractually commits through a negotiated PPA to operate as a controlled solar generator.” (p. 39). Please discuss the operating standards that the Companies propose to specify to allow a solar project to be designated a controlled solar generator that avoids the Integration Services Charge.

10. Please provide copies of the North Carolina Utility Commission’s decision regarding the Companies’ 2018 IRPs.

11. In his Direct Testimony Mr. Wintermantel indicates “Net load is defined as the gross customer demand minus renewable generation. In other words, it is the total load reduced for renewable generation and represents the load that must be served by the conventional fleet.”

(p. 6)

- (a) What is meant by the conventional fleet?
- (b) What types of generating resources does this include?

12. In his Direct Testimony Mr. Wintermantel indicates “Solar can ramp up just as fast as it can ramp down, so systems with higher solar penetrations will inevitably have periods where the minimum generation level of the generators online is greater than load, resulting in possible solar curtailments.” (p. 9-10)

- (a) Can such solar curtailments reduce the requirements for additional ancillary services?

Please discuss.

- (b) Please discuss how SERVVM considers solar curtailments versus committing additional resources to provide the required increase in ancillary services.
- (c) Did SERVVM consider limits on the cumulative amount of solar ramp up to limit the requirements for additional ancillary services?
- (d) Please discuss whether such a constraint is likely to represent a cost-effective solution to assist with solar energy integration.

13. In his Direct Testimony Mr. Wintermantel indicates “LOLEFLEX does not represent a count of NERC frequency imbalances, and it is actually not feasible to directly simulate compliance with the NERC Balancing Standards in a production cost model in five minute intervals.” (p. 16)

- (a) Please indicate for which jurisdictions the SERVVM has been used to establish ancillary service charges for solar resources? Please discuss.
- (b) In this past analyses and in the analysis performed for DEC and DEP, what types of resources did SERVVM consider for providing the required ancillary services?

14. To what degree did the SERV model consider interconnections with interconnected electric systems and reserve sharing agreements that the Companies have with these systems. Please discuss.

15. Is DEC/DEP considering the development of battery storage projects to provide solar integration services?

(a) Please discuss.

(b) How might the development of additional battery storage projects affect the costs of solar integration services? Please discuss.

(c) If analyses have been performed analyzing the cost of batteries providing these solar integration services, please: (i) provide copies of these studies, (ii) discuss the results of these analyses and provide (iii) copies of all workpapers.

(d) Please discuss the Companies' plans to develop and construct battery storage projects.

16. How did the solar integration study performed under the direction of Mr. Wintermantel ensure that the SERVVM selected the resource type that minimized the cost of providing the required ancillary services?

17. What does DEP/DEC estimate the development and construction time frame for a battery storage project to be?

18. (a) Please indicate in which jurisdictions solar resources are being charged for ancillary services or incurring some form of integration charge. (b) Where there is such a charge please indicate the amount of the charge. (c) And indicate the proportion of total capacity represented by solar specifying the amount of solar capacity in MW and the total amount of capacity.

19. Was energy storage considered in the Solar Ancillary Services Study, including the battery storage that DEP/DEC has proposed?

20. Please present an indicative schedule for the development and construction of a 2 MW solar project indicating permitting and interconnection timelines. With respect to interconnection approvals specify the anticipated timelines for elements of the process.

21. Section 58-41-20 (F) (1) of Act 62 states “The commission may also approve commercially reasonable fixed price power purchase agreements with a duration longer than ten years, which must contain additional terms, conditions, and/or rate structures as proposed by intervening parties and approved by the commission, including but not limited to, a reduction in the contract price relative to the ten year avoided cost.”

(a) Have the Companies considered the appropriate reduction in contract price relative to the ten year avoided cost for a power purchase agreement with a duration of fifteen years or twenty years. Please discuss.

(b) How would the Companies propose to calculate such a reduction in contract price relative to the ten year avoided costs that the Companies have estimated?

22. (a) What does the Company estimate the cost of a 2 MW solar PV project located in its service territory to be in \$/MWh amortized over ten and twenty years? (b) Please provide all assumptions and work papers supporting this estimate.

[SIGNATURE BLOCK ON NEXT PAGE]

John Dalton

John Dalton
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Concord, Massachusetts
September 12, 2019

BEFORE

THE PUBLIC SERVICE COMMISSION OF

SOUTH CAROLINA

DOCKET NO. 2019-185-E

IN RE:)
 South Carolina Energy Freedom Act (H.3659))
 Proceeding to Establish Duke Energy Carolinas,)
 LLC's Standard Offer, Avoided Cost)
 Methodologies, Form Contract Power Purchase)
 Agreements, Commitment to Sell Forms, and)
 Any Other Terms or Conditions Necessary)
 (Includes Small Power Producers as Defined in)
 16 United States Code 796, as Amended) - S.C.)
 Code Ann. Section 58-41-20(A))

CERTIFICATE OF SERVICE

This is to certify that I have this date caused to be served one (1) copy of the **First Set of Interrogatories to Duke Energy Carolinas, LLC** and one (1) copy of the **First Request for Production to Duke Energy Carolinas, LLC** on behalf of Power Advisory LLC, independent third-party consultant engaged by the PSC, in the above-referenced matter upon the persons named below via electronic mail:

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